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Combat Crew

Strategic Air Command January 1984

Combat Crew

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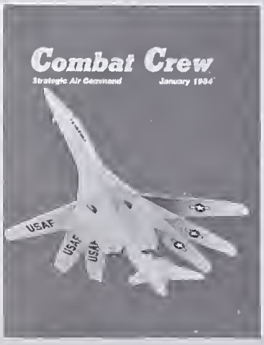

On Our Cover

This month's cover depicts the variable geometry wing of the B-1. See page 14 for more on SAC's new bomber.

SACRP 127-1 VOL. XXXIV NO. 1 January 1984

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Contributions are encouraged as well as comments and criticism. Direct correspondence with the Editor is authorized. Address correspondence to Editor, Combat Crew, HQ SAC/IGFC, Offutt AFB, NE 68113. AV 271-2620.

1983: WE

A few weeks ago, many of you, along with millions of other Americans, watched an ABC program called **"The Day After."** The film itself was not remarkable; it merely reemphasized what every thoughtful American already knew: that nuclear warfare would cause unprecedented destruction and suffering and we must do everything possible to prevent it.

What many media commentators found remarkable — although they should not have, in my opinion — was the public's reaction. The widespread emotional distress predicted by those who made the film and those who had previewed it did not develop. The *"crisis centers"* set up in many cities received few or no calls. The character of the American people had been underestimated. Most Americans are realistic and resolute. They recognize that merely deploring the horrors of nuclear war solves nothing — that we have to move beyond deploring to the positive steps that will deter nuclear war.

1983 has been a good year in that regard. In spite of the usual challenges, the Peacekeeper and B-1B were funded at acceptable levels. Testing programs for both systems have been quite successful, and I am confident they will be fielded on schedule beginning in 1986. We also finished outfitting the second and third B-52 wings with cruise missiles and began a fourth; successfully demonstrated the B-52G/Harpoon combination; accelerated the FB-111 Avionics Modernization Program; completed deployment of the MK-12A reentry vehicle on Minuteman III; accepted eight more KC-10 aircraft; began operational test and evaluation of the reengined KC-135; and began flight tests of the B-52 strategic radar upgrade and the ALQ-172 ECM system.

All these programs are designed to restore what President Reagan has called our *"margin of safety"* — a margin that had been allowed to deteriorate over the last decade and a half. To fund those programs, we have had to make some hard decisions. The last of the B-52Ds were retired in October, and the first squadron of Titan IIs — the 571st at Davis-Monthan — was inactivated on 2 December. Retiring these older systems before new ones begin to come on-line is not a choice I would have made under more favorable fiscal con-

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MADE PROGRESS

ditions. However, for the long-term security of the nation, it is imperative that we protect our modernization programs.

Those new systems — along with you who operate them — not only strengthen deterrence and keep **"The Day After"** in the realm of fiction; they also provide the necessary basis for successful arms reductions. Under current conditions, the Soviets have no compelling reason to negotiate reductions. Their aggressive strategic buildup has netted them several important advantages — not the least of which is that the average age of their delivery systems is much lower than ours. Until they see clear evidence of U.S. resolve to lessen those advantages, they will continue to support a freeze — which could perpetuate their advantages — rather than reduced levels of modern systems. I believe the Congress and the American public are becoming more and more aware of that fact.

Although Strategic Arms Reduction Talks (START) and the modernization program receive most of the media coverage and national attention, two other points need to be made. First, no system — old or new — has any deterrent value in and of itself. Deterrence depends on you — the combat crew — as well as the maintenance crews, the munitions teams, the security police and others, all working together. Second, in comparison to current system levels, we are not buying very many new aircraft or ICBMs. As a result, even in an arms reduction environment, older systems — Minuteman, B-52, FB-111 — are going to remain important. We have to do what is necessary to keep them effective, and we have to keep them safe.

1983 was a good year for safety — especially on the missile side. It has now been 18 months since we have experienced a Class A missile mishap. The whole team at Davis-Monthan has set the standard for others to follow in the Titan deactivation. They not only have maintained a SIOP commitment while drawing down the first squadron, but have experienced no safety problems. Minuteman, ALCM, and SRAM safety programs were also successful.

Our aircraft mishap rate rose slightly in 1983 after being halved in 1982, but it is still better than many prior years. The FB-111 mishap was the first in over two years, and it has been nearly three years since our last KC-135 or RC-135 mishap.

That safety record, despite the age of some of the systems, is clear evidence of the care we give our hardware and the professionalism and dedication of those who operate and maintain them. It is a demonstration of our good stewardship. We will face new challenges in 1984: the first reengined KC-135s, additional KC-10s, more ALCM-equipped B-52s on the aircraft side; on the missile side, we will begin fielding of the Minuteman III guidance upgrade, pursue development and testing of the Minuteman II guidance modernization, begin deployment of extended survivable power and continue planning for the Rivet Mile facility upgrade. *I have great confidence that — working together — we can make the new year as successful as the old.* ★★★★

General B. L. DAVIS
Commander in Chief Strategic Air Command

Fairchild Trophy winners, 509th BMW, Pease AFB.

509th Takes Fourth Fairchild

For the third consecutive year, Pease's 509th Bomb Wing has won SAC's annual Bombing and Navigation Competition.

The 509th Bomb Wing was awarded its fourth Fairchild Trophy in five years in ceremonies held early in November at Barksdale AFB. Only one other wing, the 380th BMW at Plattsburgh AFB, has captured four Fairchild trophies.

The Fairchild Trophy is awarded to the SAC wing with the best combined bombing and navigation team score for both bombers and tankers. It is named in honor of Gen Muir S. Fairchild, WWI bomber pilot and Vice Chief of Staff of the Air Force.

The FB-111 unit from New Hampshire was not only named champion of the annual SAC meet, they also won the **John C. Meyer Memorial Trophy** for the best FB-111 unit in low level bombing and electronic countermeasures and took top honors in the FB-111 crew competition, winning the top two places.

Pease crews achieved the highest competition effectiveness of **.8154** to capture the **Fairchild.** Runnerup for the trophy was the 28th BMW, Ellsworth AFB, with a CE of **.7963.** The 320th Bomb Wing from Mather AFB came in third by obtaining a CE of **.7906.**

Designed to test U.S. strategic forces' proficiency and readiness, the competition brought together units from the active duty Air Force, Air Force Reserve and the Air National Guard. The closing ceremonies at Barksdale wrapped up a seven month competition to learn who is the **"best of the best"** in high and low level bombing, precision navigation, fighter interception and air refueling.

No aircraft carried munitions during the competition as all scoring was done electronically. Bomber and tanker units flew day and night missions over specified training routes from their home bases while Tactical Air Command added realism to the mock war

Pease Wins Again!

Meyers Trophy winners, 509th BMW, Pease AFB.

competition by scrambling fighters to intercept bombers that penetrate their airspace.

Bomber and tanker teams were entered from each SAC wing along with other competitors from 14 separate tanker wings or groups, including four Air National Guard and three Reserve units. Two F-111 teams from the 27th Tactical Fighter Wing at Cannon AFB also competed during the final phases of the competition.

Runner-up Ellsworth AFB took top honors in five categories. The South Dakota B-52 wing won the **Mathis Trophy** for the best bombing unit, the **Ryan Trophy** for best B-52 unit in both high and low altitude bombing, the **William J. Crumm Linebacker Memorial Trophy** for the best high altitude bombing and the **Curtis E. LeMay Bombing Trophy.** The "Black Hills Bandits" also had the best combined and individual crew bombing scores.

Fifteenth Air Force won the **Doolittle Trophy** for overall best combined scores in low level bombing and short range attack missile accuracy and the **McDonnell-Douglas Trophy** for the best KC-10 tanker units.

The Saunders Trophy was awarded to the 190th Air Refueling Group, Forbes Field. The 190th attained the most points in all phases of tanker operation. The KC-135 Air National Guard unit was the first Guard unit to ever win the award, given in honor of Brig Gen Don W. Saunders, former commander of the 57th Air Division, who was killed attempting to set a world cruise record aboard a KC-135 in 1958.

Coming in second and third for the **Saunders** were the 157th Air Refueling Group, Pease AFB, and the 9th Strategic Reconnaissance Wing from Beale AFB.

The Mathis Trophy, awarded to the Best Bomber unit, and based on total points compiled in bombing, was presented to the 28th BMW, Ellsworth AFB. First and second runner-ups for the trophy were the 509th BMW, Pease AFB and the 320th Bomb Wing, Mather AFB. **The Mathis Trophy** honors Lt Jack Mathis who heroically died at his bombsight in a WWII raid over Germany.

The Ryan Trophy was awarded to the B-52 unit achieving the most points on bombing competition missions for high and low level altitude bombing. Scoring included evaluation of time control (release timing) and 20 simulated bomb releases. Winning this prestigious trophy was the 28th Bomb Wing from Ellsworth AFB. The 320th Bomb Wing, Mather AFB, garnered first runner up while the 379th Bomb Wing from Wurtsmith AFB took third place.

The John C. Meyer Memorial Trophy for best F/FB-111 unit in low level bombing and electronic countermeasure was won by the 509th Bomb Wing, Pease AFB. First runner-up for the award was the 27th Tactical Fighter Wing, Cannon AFB. General Meyer was the SAC Commander in Chief from 1972 through 1974.

The Gen Russell E. Dougherty Short Range Attack Missile Trophy was won by the 379th BMW, Wurtsmith AFB. The trophy is in honor of Gen Dougherty, commander in chief of SAC from 1974 to 1977. The trophy was presented to the B-52 or FB-111 unit achieving the best overall SRAM results in the competition. First runner-up for the SRAM award was the 28th Bomb Wing from Ellsworth AFB. Second runner-up was the 320th Bomb Wing, Mather AFB.

The 28th Bomb Wing, Ellsworth AFB, won the **William J. Crumm Linebacker Memorial Trophy.** The 416th Bomb Wing, Griffiss AFB, claimed second place, followed by the 92nd Bomb Wing, Fairchild AFB.

Mathis Trophy winners, 28th BMW, Ellsworth AFB.

Ryan Trophy winners, 28th BMW, Ellsworth AFB.

Crumm Trophy winners, 28th BMW, Ellsworth AFB.

LeMay Trophy winners, 28th BMW, Ellsworth AFB.

James F. Bartsch Trophy winners, 410th BMW, K I Sawyer AFB.

Saunders Trophy winners, 190th ARG, ANG, Forbes Field.

Russell E. Dougherty SRAM Trophy winners, 379th BMW, Wurtsmith AFB.

The Crumm Trophy is awarded to the B-52 unit that compiles the most points in high altitude bombing. The trophy is named in honor of Maj Gen Crumm, former commander of SAC's Third Air Division who was killed in a B-52 crash in Southeast Asia.

The Maj James M. Bartsch Electronic Warfare Trophy was won by the 410th Bomb Wing, K.I. Sawyer AFB. First runner-up for the ECM Trophy was the 96th Bomb Wing, Dyess AFB, and second runner-up was the 2nd Bomb Wing of Barksdale AFB.

The ECM Trophy is in honor of Maj Bartsch who was one of the most decorated electronic warfare officers in the Air Force. Maj Bartsch died in an aircraft accident in 1977. The trophy is presented to the B-52 unit that achieves the best overall electronic warfare results in the competition.

The Navigation Trophy was awarded to the 452nd Air Refueling Wing from March AFB, with second place going to the 93rd Bomb Wing, Castle AFB. Third went to the 190th Air Refueling Group, Forbes Field. **The Navigation Trophy** is awarded to the tanker unit compiling the most points by their crews in celestial navigation.

Winning the **Gen Curtis E. LeMay Bombing Trophy** was Crew E-05 of the 28th Bomb Wing from Ellsworth AFB. **The LeMay Trophy** was awarded to the bomber crew compiling the most points in high and low level bombing. Second place was Crew R-34 of the 27th Tactical Fighter Wing from Cannon AFB. In third place was Crew E-34 from the 28th Bomb Wing, Ellsworth AFB.

continued on page 20

A QUESTION OF CLEARANCES

QUESTION: Did you know an ATC clearance to "conduct refueling" makes the end A/R point a clearance limit fix? That to proceed beyond end A/R requires another clearance?

EXPLANATION: Authorization to conduct air refueling requires a specific ATC clearance. The first clearance a pilot receives is "CLEARED TO (destination) AIRPORT AS FILED." This clearance **does not** authorize refueling, only a route of flight. When requesting (and receiving) clearance for refueling, you are obtaining an **amended clearance.** This new clearance only specified the refueling route, nothing beyond! At end A/R, further clearance is required, and without it, you must hold — awaiting further clearance.

IMPLICATION: If you proceed beyond the end refueling point without an ATC clearance (because of frequency congestion, crew coordination, etc.), you may have to answer to some higher authority! Both the tanker and receiver must hold (preferably with altitude separation) until a further clearance is obtained.

REFERENCES: If you can still see straight (we're afraid you may already be overloaded), the following references help explain the FAA's interpretation of the end refueling clearance.

1. From FLIP General Planning, chapter 5: **ADHERENCE TO AIR TRAFFIC CLEARANCE.** The first paragraph states: "When an Air Traffic Clearance has been obtained . . . the Pilot in Command of the aircraft shall not deviate from the provisions thereof . . ." This means you must follow your original "CLEARED AS FILED" clearance. *However,* the second paragraph states: "The most important and guiding principle to remember is that *the last ATC clearance has precedence over the previous ATC clearance."* In our refueling situation, "CLEARED TO CONDUCT REFUELING ALONG (number) TRACK" constitutes your **last clearance,** and has precedence over the original one.

2. From SACR 55-3, chapter 5. **TANKER AIRCREW RESPONSIBILITIES:** "Tanker aircrews will be responsible for: *Requesting further enroute clearance* from the ATC facility for both the receiver and tanker at least five minutes prior to refueling completion." Most tanker crews know about the five minute prior to end A/R requirement, but never considered it as a request for *further enroute clearance!* Under **ATC FACILITIES RESPONSIBILITIES** you'll find: "The appropriate facility will insure that: *an ATC clearance, to be effective at the exit point* when MARSA ends, *has been issued for each aircraft* in the refueling operation and acknowledged through the tanker aircrew." Therefore, if ATC is unable to *issue* an end A/R clearance (because of frequency congestion, workload, etc.), you will not have a clearance which is *effective* beyond the end A/R point.

DISCUSSION: The FAA's interpretation of the end refueling clearance probably took the majority of you by surprise. Routinely, crews unable to obtain end A/R clearance have continued on their filed routing. Although procedurally incorrect, no one had gotten into trouble — until recently! A tanker and receiver crew took a lot of heat — not understanding why. At end A/R they separated and flew their originally filed routes — right into another aircraft's flight path! To say the controller was "miffed" is an understatement! He wanted to know where the crews thought they were going **without clearance!**

The dust has settled now, the ruffled feathers smoothed, but a valuable lesson learned. To controllers, the ATC system works because pilots understand and comply with clearances, not assumptions. Proceeding beyond end A/R without a clearance is proceeding on an assumption — a shortcut to disaster!

SOLUTION: The final answer is simple. Tankers, try to obtain the formation's end A/R clearance as soon as possible . . . use the five minutes prior as a **minimum!** Receivers, stay with the tanker until obtaining your end A/R clearance. The tanker (as a good formation leader) has to get the end A/R clearance. Receivers (as good wingmen) have to follow lead. If no clearance is obtained by end A/R, both aircraft must stay together, and hold! No one wants the kind of trouble, or disaster, which could result from violating an ATC clearance!

ONE YEAR AGO!

This month marks SIFC's first year of operation. We are celebrating our first anniversary! We're taking this opportunity to say "THANK YOU" to some very deserving people.

First to the idealists, lobbyists, and planners who fought for the SAC Instrument Flight Course's creation. To CFIC and CEVG who started the movement, waged the battles, and proved the need. To the individuals who carried the torch throughout HQ/SAC, putting out or starting fires when necessary. To the Colonels and Generals who supported and adopted the concept. To all of you, SIFC says THANKS.

To the subject matter experts who researched and developed our courseware. To the 4235 STS who compiled and validated the volumes of information which finally became SIFC, we say THANKS.

To the SIFC graduates. Wanting more information, you've challenged us; forced us deeper into the directives and made us find the "why" behind the rules governing instrument flying. You made SIFC the exchange center for instrument ideas, and we THANK you for it!

Finally, to all the pilots in the Air Force. From SAC, MAC, TAC, ATC, USAFE, PACAF, the Guard and Reserve, THANK you. The instrument questions and problems you've called us about proves the need and worth of SIFC.

As you can see, a lot of people deserve a lot of credit, and hopefully we haven't slighted anyone.* SIFC was, and is, dependent upon people with a common goal — ensuring safe instrument flying through instrument knowledge. SIFC is committed to this ideal. So as we celebrate our first anniversary, we look forward to resolving instrument problems and answering instrument questions for pilots throughout the Air Force.

THE SIFC STAFF

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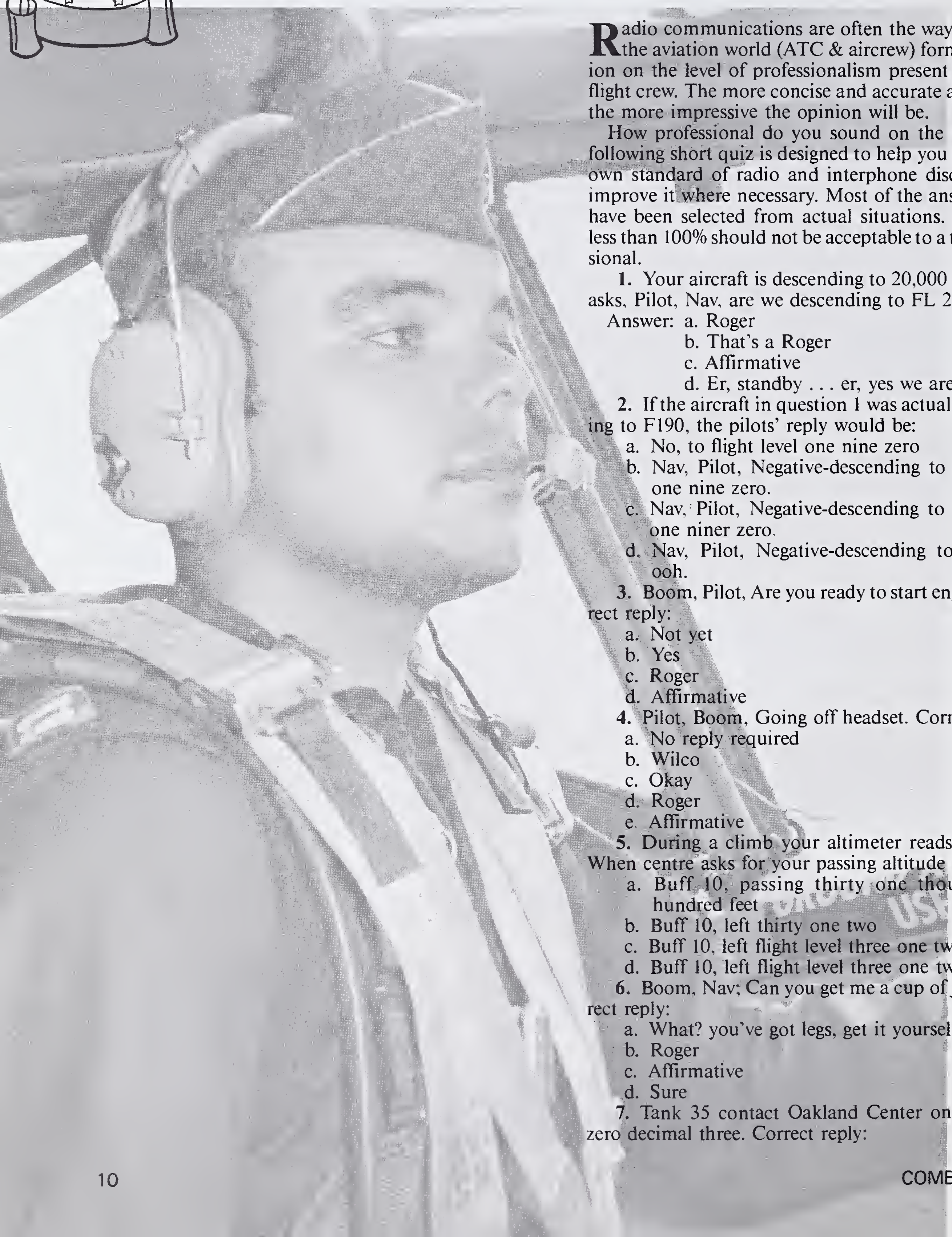
*and to you, Jim Curran, wherever you are.

Flight Lieutenant Murray R. Warfield
Royal Australian Air Force

How Do



Radio communications are often the way the rest of the aviation world (ATC & aircrew) forms an opinion on the level of professionalism present in another flight crew. The more concise and accurate a radio call, the more impressive the opinion will be.

How professional do you sound on the radio? The following short quiz is designed to help you assess your own standard of radio and interphone discipline and improve it where necessary. Most of the answers given have been selected from actual situations. A score of less than 100% should not be acceptable to a true professional.

1. Your aircraft is descending to 20,000 ft. The nav asks, Pilot, Nav, are we descending to FL 200?

Answer: a. Roger
b. That's a Roger
c. Affirmative
d. Er, standby . . . er, yes we are

2. If the aircraft in question 1 was actually descending to F190, the pilots' reply would be:

a. No, to flight level one nine zero
b. Nav, Pilot, Negative-descending to flight level one nine zero.
c. Nav, Pilot, Negative-descending to flight level one niner zero.
d. Nav, Pilot, Negative-descending to one nine ooh.

3. Boom, Pilot, Are you ready to start engines? Correct reply:

a. Not yet
b. Yes
c. Roger
d. Affirmative

4. Pilot, Boom, Going off headset. Correct reply:

a. No reply required
b. Wilco
c. Okay
d. Roger
e. Affirmative

5. During a climb your altimeter reads 31,200 ft. When centre asks for your passing altitude you reply:

a. Buff 10, passing thirty one thousand two hundred feet
b. Buff 10, left thirty one two
c. Buff 10, left flight level three one two hundred
d. Buff 10, left flight level three one two

6. Boom, Nav; Can you get me a cup of juice? Correct reply:

a. What? you've got legs, get it yourself.
b. Roger
c. Affirmative
d. Sure

7. Tank 35 contact Oakland Center on three one zero decimal three. Correct reply:

You Sound?

a. Tank 35
b. Tank 35, three one zero point three
c. Tank 35, switching
d. Tank 35, Roger
e. Tank 35, Roger Wilco, Good day sir

8. Tank 35, confirm at flight level three one zero:
a. Tank 35
b. Tank 35, confirm flight level three one zero
c. Tank 35, Affirmative
d. Tank 35, Roger

9. When leaving a level altitude of F310 on descent to F250:
a. Tank 35, out of three one zero for two five zero
b. Tank 35, left three one ooh for two five ooh
c. Center, tank 35, descending to two five zero
d. Tank 35, leaving flight level three one zero for flight level two five zero.

10. A first contact with ground frequency:
a. Minot ground, Tank 35, start engines at 45, parked K5, radio/altimeter check.
b. Minot ground, tank 35; Parked in Kilo 5, IFR to Minot copied the numbers, radio/altimeter check.
c. Minot ground, Tank 35 Copied Bravo, start engine at 45
d. Minot ground, Tank 35 parked Juliet three, IFR to Minot, information "Bravo", radio check.

11. In a radar environment, are you required to call the final approach fix on a TACAN?
a. yes
b. no
c. only if radar is out
d. both b and c

12. During a pattern ride, and established on an ILS are you required to call out of your altitude when intercepting glideslope?
a. yes
b. no
c. only when radar is not operating
d. both b and c

13. Center: Tank 35, turn left thirty degrees for traffic separation. Your reply is:
a. Tank 35 Roger Wilco
b. Tank 35 Wilco
c. Tank 35 Roger
d. Tank 35 Say again
e. Negative, we are on a celestial nav leg

14. Center: Tank 35 what is your next position?
a. Tank 35, standby — Okay Nav what's our next point??
b. Tank 35, Klamath radials
c. Tank 35, the three one zero off of Klamath for five zero DME
d. Tank 35, the Klamath three one zero radial at five zero miles

15. Are you required to read back a clearance issued on the ground?
a. No
b. yes
c. only if requested, or if you wish to clarify any portion of the clearance.
d. No, except at busy airfields like Hickam

16. In the IFR pattern, approach says "Tank 35, Traffic at ten o'clock five miles southbound, altitude unknown". Your correct reply is:
a. Tank 35 Roger
b. Tank 35 Searching no joy
c. Tank 35, negative contact
d. Tank 35, keep us advised

17. If uncertain of the frequency to change to, you should ask:
a. Tank 35, say again the frequency
b. Tank 35, was that three one zero point two?
c. Tank 35, say again
d. Tank 35, repeat frequency

18. On frequency change from one center to another, your call is:
a. Chicago Center, Buff 50 level at three one ooh.
b. Chicago Center, Buff 50 with you at three one ooh.
c. Chicago Center, Buff 50, at flight level three one zero
d. Center, Buff 500, at thirty one.

19. During a Nav leg you lose one engine due to fluctuating oil pressure. There are no other indications. When you have handled the problem and it is time to tell Center, your call is:
a. Chicago Center, Tank 50 has shut down an engine and would like clearance direct to Grissom. There are no other problems.
b. Chicago Center, PAN PAN PAN, this is Tank 50 (3 times), etc. as described in flight information handbook on page A-2
c. A if in US, B if in Europe or over the ocean.
d. Er, Chicago, ar Tank 50 has er shutdown anengineduetolossofoil pressureandrequestvectorsdirecttogrissom

20. USAF Aeronautical Stations no longer handle position reports from USAF aircraft. The correct format for a position report on HF over the high seas is:
a. The same as before
b. As per page B-8 of the FIH (Flight Information Handbook)
c. As per the ATREP format in general planning page 6-14
d. Both b and c

ANSWERS ON PAGE 24

Capt Gregory Keefer
3901 SMES, Vandenberg AFB

The Magic of AFSATCOM

Have you heard the latest trick the 3901st Strategic Missile Evaluation Squadron (SMES) has developed for the upcoming SAC Missile Combat Competition? Well, some would say it's the **Air Force Satellite Communication System** (AFSATCOM) which the SMES specifically dreamed up to baffle this year's competitors. In actuality, the purpose of this system is to provide the **Single Integrated Operations Plan** (SIOP) forces and other selected users with a secure, reliable, and survivable satellite communications capability on a worldwide basis. As a follow on to the article titled **"AFSATCOM for the Novice,"** that appeared in the October edition of **Combat Crew,** the following article details the basic operation of the AFSATCOM system as it affects the missile combat crew member.

The AFSATCOM system was developed to eliminate the inherent weaknesses of the HF and UHF radios. The system provides worldwide coverage and is jam resistant, thus increasing the reliability of our command and control network. It was specifically designed for Emergency Action Message (EAM) dissemination, force direction, force feedback, and CINC internetting.

How does the system work? Without becoming involved with the detailed, technical aspects of equipment operation, our description will be limited to the system's basic operation. It is composed of two satellite systems that interface with ground/airborne terminals. These terminals are divided into two categories: **(1) command,** and **(2) SIOP force.** Within SAC, the command terminals are located at the SAC and Numbered Air Force Headquarters, and in the SAC Airborne Command Post. The SIOP force terminals are located at all unit command posts, missile launch control centers, and alert aircraft.

The command terminals control satellite access and establish timing synchronization for one of three different access modes: **(1) Random access, (2) Time Division Multiplex (TDM-1),** and **(3) Time Division Multiplex with frequency shifting (TDM-2).** Random access allows unrestricted access to a channel by any snychronization message received every 5.4 minutes. Isn't this beginning to sound familiar? The TDM-2 mode is similar to TDM-1, except that it adds frequency shifting to the synchronization process, thereby making the system resistant to jamming.

"We don't build tricks for the Missile Combat Competition; it's all done with Mirrors."

All AFSATCOM terminals provide two-way teletype communications. They operate in any of the three different access modes using standard UHF radio frequencies. These frequencies are divided into narrowband channels for message traffic. Each channel is further divided into 60 slots, all except one of which are used for message traffic. The exception is used for slot synchronization. As a SIOP force terminal operator, your slot assignment is determined from SAC directives and the access mode you're operating in is established by your command terminal.

The AFSATCOM group in the missile launch control center is a single rack containing a tactical record teletypewriter (TRTT), which is the message input/output device, a SATCOM control panel for control and monitoring of the transmit and receive function, and an EAM panel that signals the receipt of an EAM.

The TRTT has a message memory unit composed of memory segments. When all memory segments are full, any additional message will, on a random basis, overwrite a previously filled segment. Therefore, crewmembers are provided a means to insure only needed messages are saved. They can selectively disable the memory unit for all modes except the printing of received messages, including the synchronization print. This memory storage capability is limited and easily filled, therefore, it will normally only be used when directed to prevent losing a required message. Additionally, the TRTT can print messages when received, and can transmit messages directly from the keyboard.

The SATCOM control panel provides the crewmember the capability to easily select a satellite plan, transmit channel, and receive channel. A built-in fault isolation function also exists, as well as a six-digit LED display which shows fault indications, channel select data, the AFSAT keycode, a time slot, frame numbers, and an alternate frequency. Since each satellite provides a primary operating frequency, as well as an alternate, the frequency desired is selected based upon which satellite plan is being monitored. Having an alternate frequency allows the luxury of increased message security.

While all this may sound quite involved, it is really very simple. The current operating practices and procedures found in your weapon system technical order explain how to operate the weapon system safely and efficiently. As the newness of the AFSATCOM system begins to wear off, it becomes apparent that its bark was much worse than its bite. The capabilities of this system are virtually limitless. As the system becomes fully operational, it is vital that all crewmembers become familiar with its capabilities. **As the satellite communication system expands, it will require knowledgeable users to ensure its full effectiveness.**

Take pride in being good at what you do and become completely knowledgeable of your work environment by knowing the capabilities of this system. Stay one step ahead and continue to study. If you still have any questions or would like more information, consult your local experts. *By the way, the 3901st SMES doesn't build tricks for the Missile Combat Competition; it's all done with mirrors.*

TO FLY THE NEW B-1B BOMBER

By Maj Larry Wade
HQ SAC/DOTP

To date only a select few have been afforded the opportunity to place their steeled hand on the stick of the Air Force's newest bomber, light the afterburners and slip the surly bonds. You may already have asked yourself, "How can I become one of the chosen few? Do I need the eyes of an eagle, the hands of a surgeon and Einstein's mind? What is the right stuff?"

This article will bring you up to speed on B-1B entry requirements/prerequisites. But first, let's explore where the program is today. The first B-1B will be delivered to SAC in Jun 1985. Actually, this aircraft will be the second production machine. The first will be utilized in the test program at Edwards AFB CA and rolls out 6 Oct 84. When the B-1B #2 touches down at Dyess AFB TX, location of the B-1B CCTS, the instructor cadre will have already been in place for two months.

Since early 1981, a select group of individuals at the 4235th Strategic Training Squadron (STS) have been burning pencil lead and midnight oil to develop the B-1B training curriculum. At first brush, the training program looks like any other program you may have been exposed to in your flying career, 10 weeks of academics and 8 weeks in the flying phase. But upon closer inspection you will find plans for one of the most modern training programs available today. When the school house doors open, academic training will consist of that old standard, sound/slide programs and seminars. However, a state-of-the-art training methodology known as Computer Based Instruction (CBI) is in the offing. Instruction through the use of CBI employs a mockup of the cockpit positions (cardboard wrap-a-round displays) and a computer display and terminal for each position. Entire courses will be taught with this interactive system. Sound mysterious? Let's break the code and see how simple CBI can be. Imagine yourself sitting down to start a course on the fuel system. First, enter your student identification number on the computer keyboard. The computer would then display a record of other courses you have started or completed and may even advise you to complete a different course before tackling the fuel system. Let's assume everything is in order and that you will continue the course. CBI will take you through an overall description of the fuel system, then backtrack and begin to fill in the specifics. It will describe where the pumps, fuel lines, vent lines, tanks, fuel panel switches, gages, etc. are located and how each part functions. You will be asked questions throughout the dissertation. If you respond incorrectly (the keyboard may be used to respond) you will be allowed to review the area where your Einstein mind "glitched." You may also be asked to touch a pictorial display on the computer screen with a special pen in order to activate a switch and demonstrate your knowledge of system operation (thus the term interactive). Sound easy? It can be if you are attentive and reasonably intelligent. But remember, the computer isn't easy to fool. It will know how well you understand the fuel system and will be tracking your performance throughout the course. An important plus for CBI is that it truly allows you to complete each course at your speed.

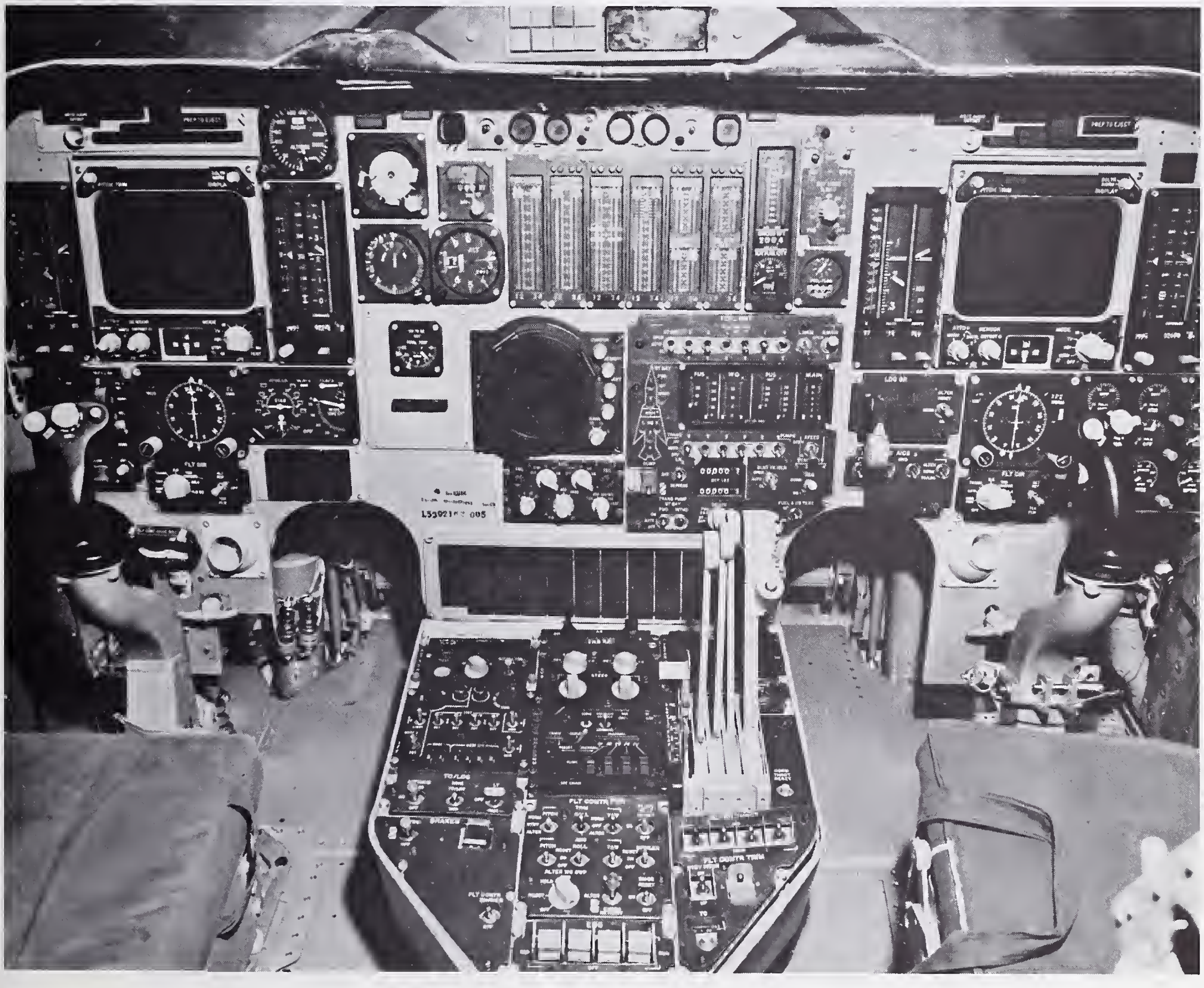
The CPT is a complete cockpit mockup for both the front (pilot and copilot) and aft (Offensive System Operator (OSO) and Defensive System Operator (DSO) crew stations. The CPT is capable of simulating flight, i.e., takeoff, climb, cruise, navigation, low level and penetration to land. There are no motion or out-of-the-window visual systems. Most essential cockpit controls and displays are functional though many of the non-essential type are not. Fidelity is sufficient to operate those controls necessary for simulated flight and to accomplish systems operations to include emergency procedures.

Many of the cadre of B-1B crews who initially man the five tactical squadrons will be trained without benefit of a Weapon System Trainer (WST). The first WST is scheduled for delivery at Dyess in late CY 87. Each of the four main operating bases will have a WST. Dyess, a collocated tactical squadron and CCTS, will have two WSTs.

The flight line phase of training consists of 14 training sorties with some CPT missions interspersed between flights. When the WST arrives on scene it will replace many of the CPT missions. Flight missions will be an average of 5.3 hours in duration and will encompass the standard SAC profile, e.g., takeoff, air refueling, high altitude navigation, low altitude terrain following and transition and landings.

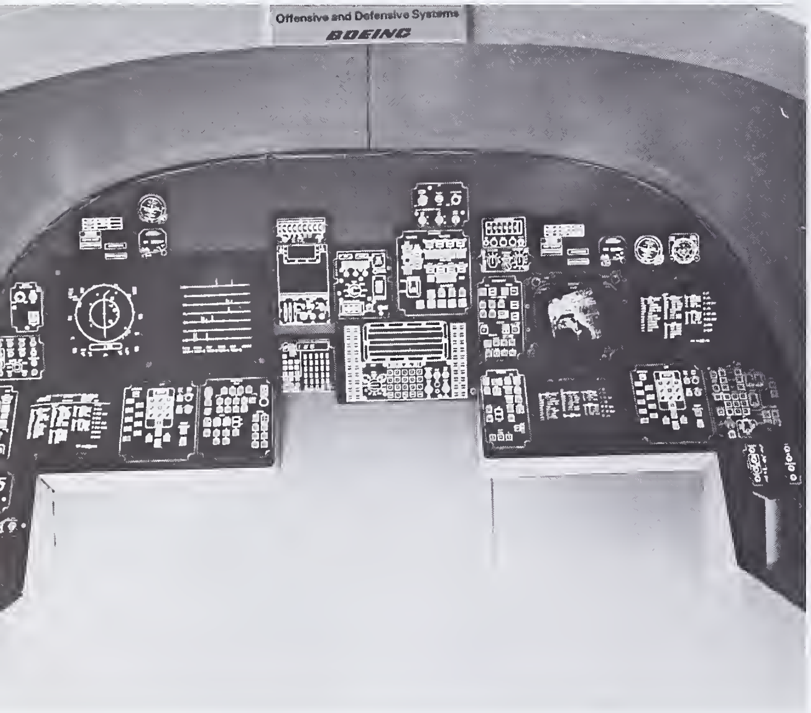
Speaking of flying the aircraft, what is it like to fly the B-1B? Well, the test pilots say it's a fantastic aerospace vehicle. The current test vehicle is B-1A #2 modified with B-1B flight control characteristics and weapons bay doors. The vehicle is being used to test flying qualities and weapon carriage and separation. The B-1B will employ state-of-the-art cockpit displays which include Visual Situation Displays (VSDs) and tape instruments to name a few. The VSD presents a TV type display of attitude superimposed on Terrain Following Radar (TFR) information.[2] Pilot and copilot

B-1A cockpit layout.



TO FLY THE NEW B-1B BOMBER . . .

instrument panels and side panels are, with few exceptions, mirror images of each other. The OSO and DSO stations look like the control console of a space shuttle. The B-1B employs a phased array radar antenna and Synthetic Aperture Radar (SAR) which is used for navigation, bombing and TFR operations. Offensive system operators will not see the customary constant sweep but instead, a synthetic picture with varying refresh rates and with an absolutely phenomenal level of detail.[3]



"OSO and DSO cockpit mockup."

Defensive systems operators will utilize the ALQ-161 which is a fully automatic and reprogrammable ECM system capable of countering multiple threats. As mentioned at the beginning of this article, a control stick rather than yoke is used to control the aircraft. Flying qualities are excellent. Stick forces are less than those found in the B-52, but higher than those of the FB-111. The B-1B is a pilot's dream in the traffic pattern. Roll stick force and roll control/stability make the B-1B a superb instrument airplane. Air refueling is very easy and can practically be accomplished with two fingers on the stick.[4] Low level is exhilarating to say the least.

Note the location of the refueling receptacle.

Imagine thundering along in an aircraft two-thirds the size of a B-52, in a fully automated TFR mode with computers flying the machine, at 550 MPH at a very low altitude.[5] Then imagine doing the same thing at

"Imagine . . . flying the machine at 550 mph at a very low altitude."

night and/or in IFR conditions. But, enough of the things crewmembers dream of and back to the point of this article.

A brief rundown on training milestones is in order. As mentioned earlier, the CCTS doors open in April 1985. Between April 85 and May 86, twenty instructor crews will validate the CCTS curriculum and complete their checkout in the aircraft. Student training begins in May 1986. The first students graduate in Aug 1986 and at a rate of six crews each five weeks (approx 60 per year) including staff.

Planned B-1B basing breaks out in the following manner. Main Operating Base (MOB) number one is Dyess AFB, Texas, which will possess 26 aircraft. Ten aircraft will be dedicated to the CCTS and 16 to the tactical squadron. The location of the other three MOBs has not been finalized but two MOBs will receive 16 aircraft and one will receive 32. Ten aircraft will make up the backup aircraft inventory.

A total of 105 crews are required to man the five tactical squadrons. Therefore, 105 each aircraft commanders, copilots, radar navigators and electronic warfare officers will form the initial cadre. Current guidance calls for 80 percent to be drawn from B-52 resources and 20 percent from FB-111 resources (These numbers reflect the current percentage of B-52 and FB-111 crews in the total SAC bomber force). Neither weapon system can sustain such a loss of experienced personnel for very long. Therefore, it is likely that some KC-135 personnel and others will eventually augment B-1B requirements.

Now we will answer a question many of you have patiently waited to hear. What are the specific prerequisites each specialty must meet in order to compete for B-1B cockpit duties? Crewmember requirements are listed below: *(Remember initial selections will be limited to B-52 or FB-111 qualified personnel)*

- **Aircraft Commander**
  - 1800 hours total time
  - Three years in a SAC weapon system
  - 18 months as an aircraft commander
- **Copilot**
  - 750 hours total time
  - One year in a SAC weapon system
- **Offensive System Operator (OSO)**
  - 1500 hours total time
  - Three years in a SAC weapon system
  - 18 months as a radar navigator
- **Defensive System Operator (DSO)**
  - 1000 hours total time
  - Two years in a SAC weapon system
- **Other requirements:**
  - Excellent flying record
  - Grade of senior major or below
  - The whole man concept will be employed for all selections

Instructors for the initial cadre at CCTS will be drawn from the 4235th STS and B-52/FB-111 instructor resources. The total requirement is 20 instructor crews. An instructor crew consists of an instructor pilot, instructor OSO and instructor DSO.

Prerequisites are as follows:

- CCTS experience is highly desirable
- One year SAC instructor experience
- Three years in a SAC weapon system
- Recommendation of your unit commander

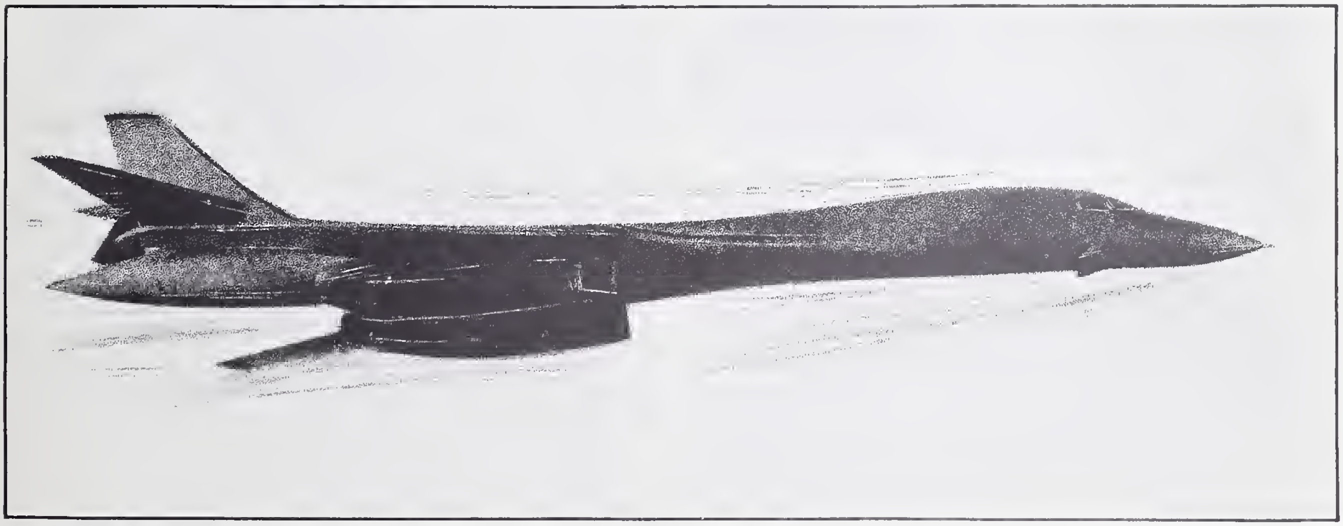
Additional prerequisites are:

- Instructor pilot — 2000 hours total time
- Instructor OSO — 1800 hours total time
- Instructor DSO — 1500 hours total time

Other requirements:

- Outstanding flying record
- Grade between senior major and captain

Instructor screening action will begin in Dec. 1984. Crew cadre selection begins Jan 1986. Individuals in an active flying status are in a better position for selection than someone in a nonflying staff job. If selected for either instructor or crew duties you should expect to serve a minimum three-year tour. One last word, the most effective method to insure your records are reviewed for B-1B selection is to reflect your desires on the AF Form 90. *Good luck.*



Hot Info About COLD WEATHER

Maj Norm Flemens
380 BMW, Plattsburgh AFB

Now that the first major blizzard has ripped its way across the states, cold winter weather is the topic of conversation. If you managed to get in a nice nap last fall during the ground training covering cold weather operations, read on. This article is a good review in case you missed it the first time around, and just might jog your memory in a couple of places. — Editor.

Each year in the fall, you receive lengthy orientation briefings on cold weather procedures, or maybe you are fortunate enough to be stationed south of San Bernadino and only worry about Old Man Winter when you deploy. Either way cold weather and its effects are factors we all should review occasionally. This article is not meant to be all inclusive; however, it will stress the more important points to remember in taking care of yourself and planning for potential aircraft problems associated with winter weather. I apologize to our subterra firma friends about the lack of missile system info, but I hope you will read on, because the material about personal protection will be of value.

Before getting to the heart of the material, a review of basic weather phenomenon is appropriate. Living north of the Mason-Dixon line in the winter can be linked to scuba diving; you are in an environment in which you cannot survive without the proper equipment. Realize that temperature differential between ambient conditions at a northern base and an ice bath is often greater than a southern base warm temperature and that of a hot tub. Realize also that there is usually little or no wind with the extremely low temperatures, (except in North Dakota) so it seldom seems that it is really that cold.

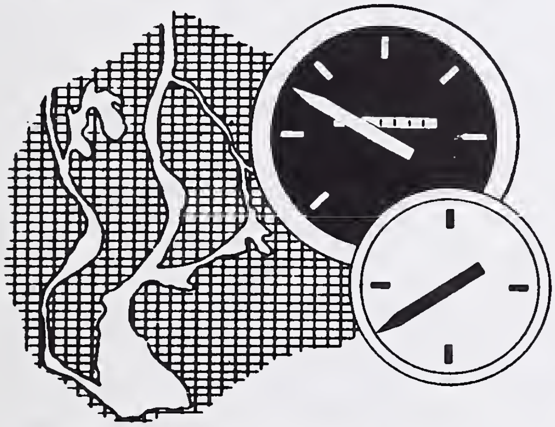
The personal equipment you are required to have and use during the cold weather months is described in SACR 55-51. Crews normally dress adequately when outside preflighting or on their way to the site. Most of the problems occur during off-duty time. Just think about the last party you went to and wanted to dress fashionably to impress that special someone. What would have happened if you had slid off the road a few hundred yards from home and had to walk that "short" distance? At best you would be extremely uncomfortable, but probably you would have suffered first degree frostbite on the ears, face, feet, and knees. Yes, knees, as you walk they press against your trousers; squeezing out that insulating layer of "dead air" space, transmitting the cold directly to your knee caps. Also consider your traveling companions and the type of clothing they might be wearing. When you brave the elements you should consider the ultimate exposure to the cold you may suffer if the unforeseen happens, and prepare accordingly. More than one disaster has been recorded because a car has failed in the cold weather and the occupants froze to death waiting or walking for help.

Here are a few tips that will assist in winter survival:

- The three areas of your body that radiate a great deal of heat (and are too often poorly protected) are your head, your gluteus maximus, and your kidneys. If you are in the really cold country and supply has issued a short parka, you may assume they are out to get you!

- On many installations the Air Force issue parka is authorized for wear with any uniform combination or civilian clothing.
- Boots or mukluks should be the standard foot gear.
- Wear a light pair of gloves at least. Metal door knobs cannot be released when grasped bare-handed at very cold temperatures.
- If you get cold walking and decide to limit your exposure by running, you have made a grave mistake. Around −25° the increased respiration rate takes heat out of your lungs faster than your body can replace it and you pass out. With your body now super cooled you will not come to.
- Avoid overheating yourself. Moisture destroys a great deal of the insulation quality of your clothing. Water conducts heat away from the body 27 times faster than still dry air. If you are warm, remove a layer of clothes. Your goal should be to remain cool (in more ways than one) but not cold.
- Blowing your warm breath on your cold hands is not the answer. Your warm breath is also very moist and if there is anything cold hands do not need it is a layer of water vapor.
- To stay warm when it's cold, remember **COLD**
  Clean clothing is essential.
  Overheating is dangerous.
  Loose and Layered is basic.
  Dry clothes are vital.

Aircraft Preparation



In preparing the aircraft for flight during periods of extreme temperatures probably the single most important thing to remember is that it will take more time than usual. Instruments and electronics must have extra warmup time and hydraulics are going to be agonizingly slow. Flight and ground crews move slower and redball maintenance is slower than normal. For planning purposes, you can expect things to begin slowing at around minus 15 and continue to decrease to a snail's pace at lower temperatures. Don't make yourself late by delaying in base ops too long. When you encounter a problem during preflight, work around it.

Winter problems are caused by lack of heat, so the remedy for these problems is the addition of heat. As a form of preventive maintenance, some bases preheat the aircraft (engines and cockpit) when the temperature is below freezing. The nice warm cockpit leads you to believe there should be no cold problems with aircraft systems but that is not correct. Many aircraft systems/components require warmup during cold weather so adhere to Dash 1 procedures.

Snow and Ice

The SAC Sup to AFR 60-16 says, "Do not takeoff until all ice and snow have been removed from the aircraft." Snow removal should be done for you with brooms, squeegees, ropes, and the blower portion of deicers. Heated isopropyl from deicers should be used only on ice. Many crew chiefs will spray isopropyl on a couple of inches of loose snow thinking it is faster and easier only to find they have created a uniform layer of slush which is impossible to remove quickly. If you see such a situation developing, STOP IT.

Taxiing on ice or packed snow poses no serious problems if proper precautions are taken — lead your stops and take turns slower than normal. You will notice very little skidding and sliding tendency with a heavy aircraft but a light one will really bear watching. It will take a good deal of power to get the aircraft moving from the parking area. The wheel bearings are cold and stiff and the tires have flat spots so expect to use higher than normal power settings. Remember, though, that all the AGE on the ramp is sitting on ice, so pull back the power before you turn. The big red 50 pound capacity fire bottles have been blown over 200 feet across the ramp. If they ever hit anyone or anything it would be disasterous. It is worthwhile to quote SAC Sup to AFR 60-16, "Do not take off under conditions of freezing rain or freezing drizzle." Insure that takeoff data accounts for reduced braking capability due to ice and snow on runway in the event of an abort. Care should be exercised to avoid exceeding climb schedule speeds due to additional thrust available at low temperatures. After landing, the engines put out a surprising amount of thrust at idle when the air is very cold and dense, making the aircraft want to run away while taxiing at a light weight. Before shutdown check flight controls, life devices, and aircraft systems; the next crew will appreciate your *identifying* a problem that might cause them a late takeoff.

continued from page 7

Best B-52 Crew, 28th BMW, Ellsworth AFB.

The Best Crew Awards were won by the following crews and units:

Best B-52. First: Crew E-05, P Capt Robert C. Little, CP Capt Dwight A. Klenke, EW Capt Robert Garza, N 1Lt Robert Umsteadter, RN Capt Thomas T. Dyer, G Sgt Christopher M. Brady, 28th Bomb Wing, Ellsworth AFB.

Second: Crew E-21, commanded by Maj John A. Kromka, 320th Bomb Wing, Mather AFB.

Third: Crew S-02, commanded by Capt Wilhelm F. Percival, 416th Bomb Wing, Griffiss AFB.

Best FB-111. First: Crew E-19, P Maj Daniel Crum, RN Capt James N. Openshaw, 509th Bomb Wing, Pease AFB.

Second: Crew S-02, P Capt Rodney E. Gibson, RN Capt Kenton H. Holmes, 509th Bomb Wing, Pease AFB.

Best F-111. First: Crew R-25, 27th Tactical Fighter Wing, Cannon AFB.

Best KC-135. First: Crew E-125, P Capt Timothy H. Miner, CP Capt David J. Vrabel, N 1Lt George E. Harlan, BO Sgt Aric J. Weichmann, 9th SRW, Beale AFB.

Second: Crew S-007, commanded by Maj Fred Carpenter, 452nd Air Refueling Wing, March AFB.

Third: Crew R-152, 157th Air Refueling Group, Pease AFB.

Best KC-10. First: Crew E-201, 79th ARS, March AFB.

Second: Crew E-278, 78th ARS, Barksdale AFB.

Best KC-135 Crew, 9th SRW, Beale AFB.

Best FB-111 Crew, 509th BMW, Pease AFB.

TODAY'S BOOM OPERATOR

TSgt David Wimmer
924 ARS, Castle AFB

The jobs and responsibilities of a boom operator have changed in the last few years. The "passing gas" role has expanded and he/she is gaining experience as a passenger specialist, loadmaster, flight engineer and flight steward; all combined into the AFSC of 112XO.

With the ever increasing demand of cargo movement within the SAC airways, today's boom operators are experiencing areas to which they have never been previously exposed. How many times have you flown as a passenger on a KC-135 or KC-10 and not realized that the same person who gave you your passenger briefing is the same person who loaded your baggage, preflighted the aircraft, did the inflight refueling and shot the sextant for the navigation part of the mission? Today's Air Force boom operators are in a steady state of readiness because changes in the world situation can easily change their mission. What was a passenger-carrying mission of dependents and military personnel to Alaska may very well become a troop and cargo carrying mission to one of the world's hot spots.

In the role of a flight engineer, today's boom operator computes the weight and balance of the aircraft, assists the pilot team in the monitoring of the fuel panel and is constantly aware of the center of gravity of the aircraft. Although he or she is not a flight engineer, he or she possesses the knowledge of the systems of the aircraft and can be counted on to assist when problems arise.

Today's boom operator has many chances to expand his/her career into different type tankers. Today's boomer can fly the KC-135A/Q, the KC-10A or EC-135.

Receiver pilots — Have you ever sat down after a flight and talked with a tanker crew? The cross-talk could be one of the most informative conversations you have ever had. The person looking at you through the sighting window is providing you with fuel and monitoring safe separation but he/she is also responsible for the safety of those on the KC-135. Today's boom operators, like our earlier counterparts, have to be ready to refuel a large number of diverse aircraft, some slow and low, some high and fast, some big and some small. Each requires the watchful eye of the boomer for everyone's safety.

The average boom operator is 22-28 years of age, has 6-10 years in service and at least one year of college. Today's boom operator is a special breed of person, dedicated to his/her job. They are constantly learning new ways to do it from the older boom operators and applying the lessons learned by those who paved the way. Today's boomers can be depended upon to do a professional job with a great deal of pride.

The next time you fly as a passenger or as a receiver stop and think, the person flying with you or refueling you is truly a person of **"many hats."**

Aircraft Maintenance

SSgt Mathew D. Collins, 93 BMW, Castle AFB, is SAC Maintenance Airman of the Month. Assigned the challenging task of rebuilding the Inspection Branch training program, Sgt Collins designed a program around the maintenance task performed by B-52 phase personnel using technical orders as his lesson plans. The results have been spectacular. During a recent IG evaluation, the training progression charts designed by SSgt Collins received favorable comments and his excellent training program contributed directly to the excellent rating received from the IG. SSgt Collins was also recognized as a "Superior Performer" for his efforts.

Missile Maintenance

A1C Curtiss E. Anderson, 308 SMW, Little Rock AFB, is SAC ICBM Maintenance Airman of the Month. Airman Anderson's outstanding rating on installing the warhead into the reentry vehicle shell assembly and disassembling it during a recent 3901 SMES evaluation has earned him a "Professional Performer" award from the SAC Inspector General. During a recent Defense Nuclear Agency inspection he again excelled in tasks evaluated, helping his branch and wing receive the best rating of any unit this year.

PROFESSIONAL PERFORMERS

Well Done!

Crew E-113 of the 42 BMW, Loring AFB, recently distinguished themselves by saving an F-4E aircraft under extremely adverse conditions. Crew E-113 consists of Capt Robert J. Goodman, P; Capt Michael F. Clover, CP; 1Lt Karol R. Wojcikowski, N; and SSgt Douglas D. Simmons, BO.

On 5 Sep 83, the KC-135 crew was refueling F-4s on a Crested Cap I mission when one of the F-4s, Brian 23, experienced a failed engine nozzle. The flight of two F-4s was directed to reverse course toward Gander International Airport, Canada, 520 NM away. Eventually, an oil leak forced shutdown of the same engine. By then, Crew E-113 had left the Crested Cap formation to come to the assistance of the fighters in their worsening situation.

Flying at maximum airspeed, the crew overtook the descending F-4s in half an hour, due to an excellent rendezvous by the navigator, with a minimum of electronic aids. The pilot exhibited skillful airmanship, passing to the right of the fighters and then making a left "S" turn to pull in front of them. The copilot was coordinating oceanic clearances and calculating fuel reserves for the divert to Gander. During this time, the crippled F-4 was losing thrust on the remaining engine. Brian 23 was forced to drop his center tank in an attempt to reduce drag and remain airborne. Further, the F-4 pilot reported that he could not make right hand turns; hydraulic failure had caused the loss of his right spoilers.

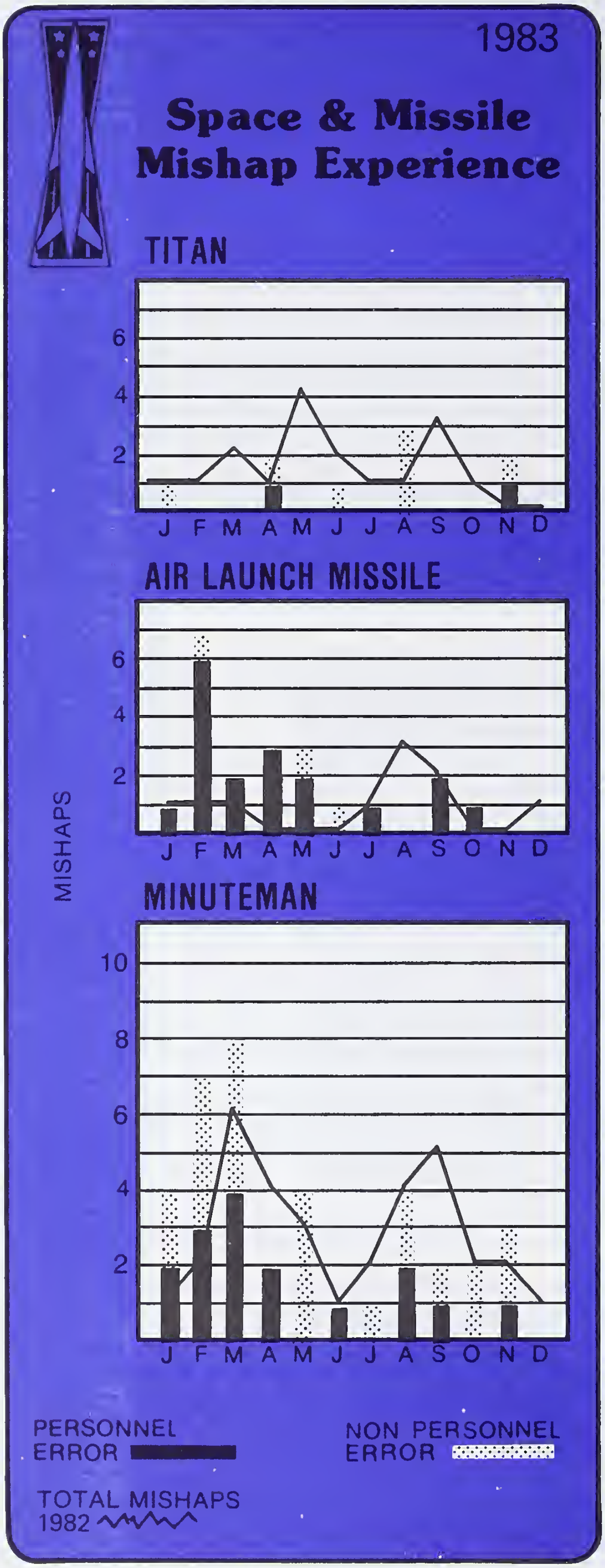
As they pulled the tanker in front, the F-4s were descending through the 7500 feet Mean Sea Level, unable to level off. Crew E-113's pilot directed the crippled F-4 to attempt an air refueling contact in order to tow the fighter on his refueling boom, but the receiver was unable to close in from 200 feet. Using his boom operator as eyes in the back of the aircraft, Capt Goodman decreased airspeed, literally backing into the receiver to make refueling contact. The contact attempt was complicated by very low airspeed, receiver thrust limitations, adverse yaw, and the F-4's loss of control authority.

In a desperate attempt to stay airborne, Brian 23 had to drop the wing tanks as the remaining engine became thrust limited. Brian 23 now did not have sufficient fuel reserves to safely reach land. SAR forces had already been launched due to the imminent loss of the disabled F-4.

The two aircraft made their first contact descending through 4500 feet MSL and transferred 2700 pounds of fuel. Capt Goodman then gently leveled his tanker, and slowly climbing, towed the F-4. Despite smooth technique by both pilots and the boom operator, a brute force disconnect occurred. Capt Goodman descended his tanker at 1000 fpm, and obtained a second contact at only 200 knots airspeed and 2000 feet above the water. Again, the tanker towed the F-4 away from danger, climbing to 6000 feet MSL. A second brute force disconnect resulted in a third descending hookup at only 3500 feet altitude.

After slowly climbing to 5000 feet, and having towed the F-4 for a total of 160 miles, a third disconnect occurred. This time, though, the F-4 was able to maintain level flight and accelerate to a safe 250 knots. Crew E-113 led the flight to a course that facilitated a left turn to final, thus countering Brian 23's control degradation.

Crew E-113's extraordinary airmanship and judgment clearly saved a multimillion dollar aircraft from destruction, and prevented two possibly fatal ejections into the frigid North Atlantic waters. The clear thinking and innovation in a uniquely adverse and highly stressful situation reflect great credit upon this entire crew. Well done.



continued from page 11

ANSWERS TO QUESTIONNAIRE

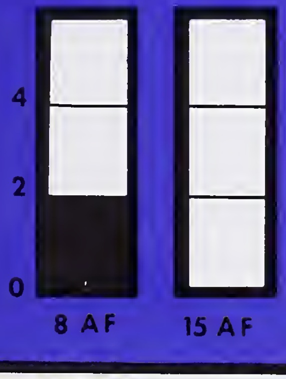
1. C. G.P., page 2-2.
2. C. FIH, page B-4, para 2(b) and IFR Sup, page A15.
3. D. G.P., page 2-2.
4. D. An acknowledgement to the crewmember is required.
5. D. G.P., page 2-14 "Flight Level".
6. C. G.P. page 2-2.
7. A. G.P., page 5-19, para 1. Radio frequencies are not read back. Notice that "decimal" — not "point" — is used in all ICAO calls (FIH, page B-4, note 2).
8. C. G.P., page 2-2. Answer B could also be appropriate if you wish to be very specific. "Roger" means you have received and understood the transmission — IT DOES NOT MEAN AFFIRMATIVE (YES).
9. D. FIH, page B-3, para 1(b) and G.P., para 5-19, para b.
10. D. G.P., page 5-9, para b. Some bases may require a start engines time to comply with local anti-hijack procedures. Do not ask for an altimeter setting if it was copied on the ATIS.
11. D. IAW FIH, page B-3, para 1(e).
12. A. IAW FIH, page B-3, para 1(d).
13. B. G.P., page 2-39. "Wilco" means that you have received, understood and WILL COMPLY with the message. "Roger Wilco" is *never* a cor-

SAC'S TEN YEAR FLYING SAFETY RECORD

CLASS A FLIGHT MISHAPS

YEAR	73	74	75	76	77	78	79	80	81	82	83
TOTAL MISHAPS	5	8	4	4	4	1	5	4	4	2	2
FLYING HOURS 100,000	6.1	5.1	4.2	3.9	3.7	3.6	3.6	3.4	3.5	3.5	2.8
FATALITIES	0	14	7	22	10	5	7	2	14	9	7
RATE	.82	1.6	1.0	1.0	1.1	.28	1.4	1.2	1.2	.58	.65*

*Estimated Rate based on 310,000 Flying Hours



29690

OCT FLYING HOURS

275978

1983 FLYING HOURS

APRIL JUNE	B-52G FB-111A

1983 MISHAP STATS

rect call because "Roger" means "received and understood" which also a part of the meaning of "Wilco".

14. D.

15. C. G.P. Section 5-10, para f.

16. C. G.P., page 2-24 (Negative contact). Other acceptable calls would be "Tank 35, Contact" or "Tank 35, request avoidance vectors". "Tallyho" is not recommended flip terminology. The format for traffic reporting is G.P., page 2-36.

17. C. G.P., page 2-31. "Repeat" is not listed under terms in General Planning and should not be used. The other answers are too verbose.

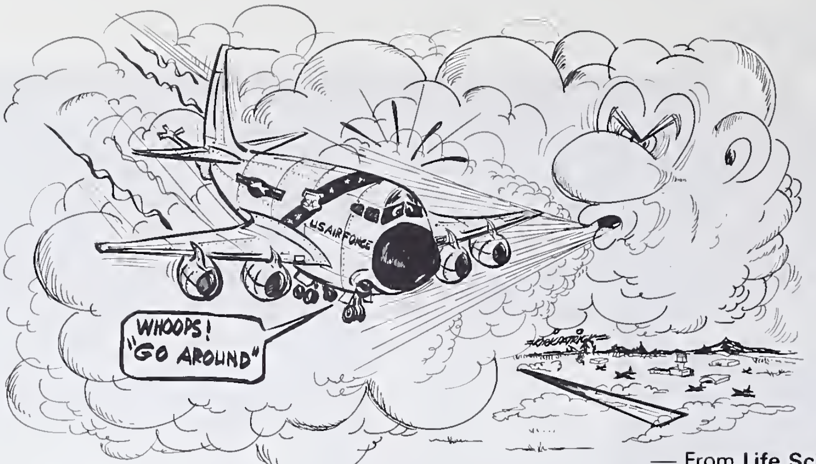
18. C. G.P., page 5-22, para b(2)(c). Remember the phonetic alphabet in your normal day-to-day transmission.

19. B. FIH, page A-2. An Urgency call (PANcall) is given whenever you require priority from ATC e.g. You do not want to be given holding on arrival at your destination. "Partial engine failure" is *exactly the same* as *an* engine failure so a PANcall is appropriate. Only applicable sections of the call are required after the callsign.

20. D. The general format of the position report is given in the FIH but the EXACT TERMINOLOGY to be used is in General Planning, para 6-17 and shown on the table on page 6-14. In particular note that the position report format shown on the back of the IFR Supplement is not used. Note that IAW G.P., para 4(c), ICAO procedures are used. Examples of correct reports are shown at Item 12, G.P., page 6, para 17. The departure report on FIH page B-19 is no longer required.

Well how did you do? If you scored less than 90%, maybe a read of General Planning or the Flight Information Handbook would be in order because most calls are listed in these publications.

Remember that sounding professional is an important part of being a professional.



— From **Life Sciences**, Oct. 1983,
Directorate of Aerospace Safety, Norton AFB

Deception by Blowing Fog

Of all approaches, there are few challenges as **tough** as approaches to minimums though **blowing fog.** The combination of low stratus and blowing fog creates an indefinite ceiling and denies a breakout on continued descent. There is very poor contrast between fog and clouds; fog obscures the ground as well as other approach references.

Normally, fog is associated with still air; the pilot must contend with a visibility problem but not with a cross wind.

Blowing fog (known as advection fog) can present problems in addition to those of visibility. In the presence of crosswind, precise instrument flight becomes exceptionally demanding. If given rapid-fire heading changes, the pilot will tend to focus on the ADI, forgetting about VVI or airspeed. However, the pilot must avoid large attitude changes which affect vertical velocity, stay aware of conditions which can be encountered, and resist the temptation to go visual too soon. As they become available, he should begin to integrate visual cues into the cross-check during the later portions of the approach.

In a multi-place aircraft, responsibilities are usually divided, e.g., one pilot stays on the gauges; the other pilot concentrates his attention outside, attempting to pick up visual cues. He must also monitor the altimeter for critical heights, such as Decicion Height (DH). It is generally the responsibility of the second pilot to make the Land/Go Around call at DH. During precision approaches he calls "land," above or at DH if (1) the runway environment is in sight and (2) the aircraft is in position for a normal landing. If not, he calls "Go Around." It is vital that the second pilot actually have the runway environment in sight before calling "Land." If all he sees are approach lights and fog, he can be fooled into thinking he is higher than actual, since *almost anything degrading visibility will generate the false illusion of height or distance.* Not only is it critical that the second pilot make the correct call, it is important that he be timely. If the second pilot's call is delayed, the first pilot may be mislead into thinking he has more time and altitude than actual, jeopardizing all.

> **"Almost anything degrading visibility will generate the false illusion of height or distance . . ."**

When told to "Land," the pilot who is flying has a tendency to go completely visual and forget his gauges, especially the VVI. Depending upon factors such as his own visual acuity, contrast sensitivity and accommodation versus that of the second pilot, he may require several seconds to see what the second pilot sees. He is likely to fall victim to false height illusions generated by approach lights in fog. If the approach lights angle uphill, he may think himself high. He is set up for a duck-under, unconsciously lowering the nose to get lower, where he expects to see better.

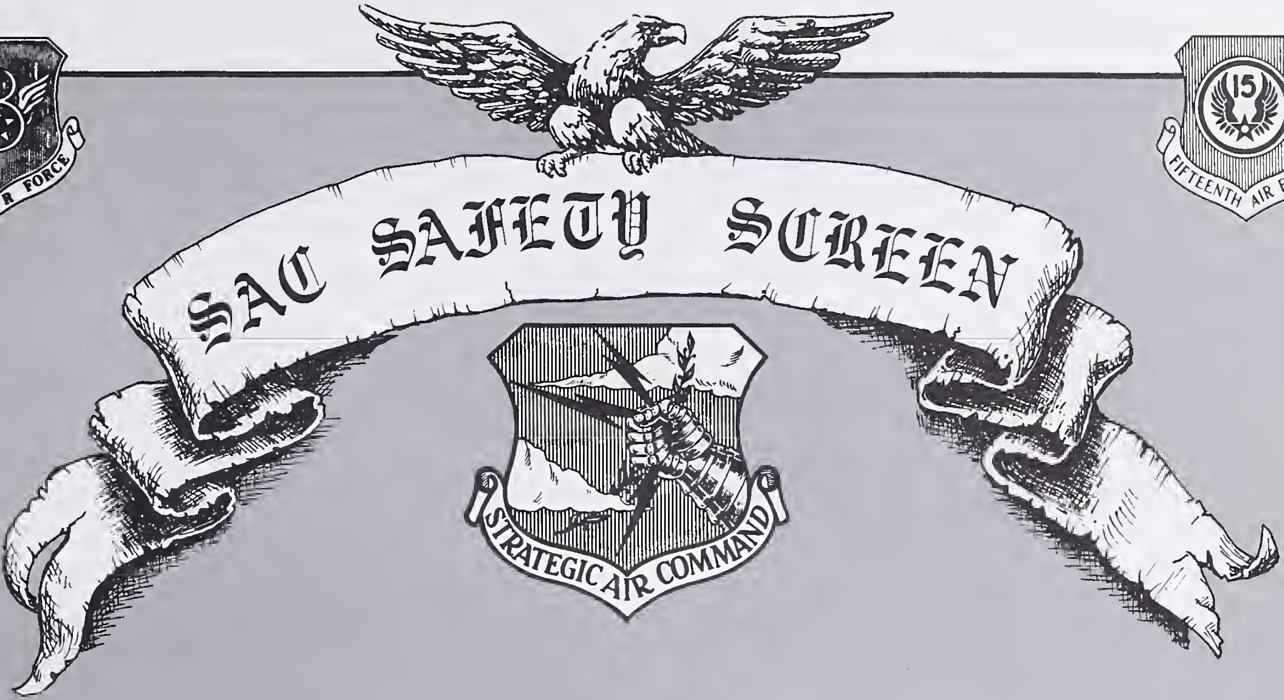
In the absence of good outside references, a 2-3° pitch change may go undetected. However, the effect of this attitude change is an unexpectedly high rate of descent. It is vital to control the vertical velocity.

For example, at 130 Kts ground speed, 1° pitch change — 227 FPM; 3° pitch down would add 681 FPM to your rate of descent. You can see it's important to keep your attitude under control and stay aware of your vertical velocity.

For a more thorough discussion of Landing from Instrument Approaches, refer to AFM 51-37 (C2) Section G, 6-19, dtd Oct '82. These sections contain excellent up-to-date descriptions and discussions involving the transition from instrument to visual flight in various types of fog, rain and snow, plus the visual illusions to be expected.

Approaches into indefinite minimum ceilings with blowing fog are deceptive and are exceptionally demanding. Bombarded with constant heading changes, the pilot tends to channelize his attention on the ADI to the exclusion of other gauges, including the VVI. As approach lights begin to appear, he tends to go completely visual too soon, again to the exclusion of his gauges, including the VVI. Approach lights viewed through fog give the false illusion of height. Whether consciously or unconsciously, he tends to drop the nose and duck under. Avoidance of this pitfall requires good crew coordination, adherence to guidance, and control of the vertical velocity.

SAC SAFETY SCREEN



6 SW, Eielson Crew S-16: TC Capt Michael G Smith, R-1 1Lt Jeffrey A Turner, R-2 Capt Jimmy R Holder, R-4 1Lt Steven E Schafer, MT Capt Mark F Wilnes, PT SSgt Kenneth A Getsee, ET SSgt William D Pickle

60 BMS, Andersen Crew E-25: AC Capt Daniel O Aronson, CP 1Lt William T Jackson, RN Capt Monty Valentine, N 1Lt Thomas L Martin, EW 1Lt Paul G Page, ADG SSgt George A Worsham

60 BMS, Andersen Crew E-34: AC Capt John R Culclasure, CP 1Lt Anthony P Taijeron, RN Capt David M Barcus, N Capt Kenneth B Havens, EW 1Lt Albert F Spohn, ADG SSgt George K Mosley

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62 BMS, Barksdale Crew S-01: IP Capt David A Solan, CP 1Lt Roy M Conrad, CP 1Lt Richard G Archambault, IR Capt Rudolph K Hertz, IN 1Lt Richard T Westland, IE Capt Warren R Anderson, IG TSgt Ralph F Davino

71 AREFS, Barksdale Crew E-131: P Capt Paul B Knowlton, CP Capt Bryan L Windham, NN 1Lt Stephen W McCool, BO SSgt Harry L Allen

9 BMS, Carswell Crew R-63: AC Capt William H Franklin, CP 2Lt Edward A Vignaroli, IRN Maj Charles W Bristol, N 1Lt Robert H Hendricks, EW 1Lt Clinton E Taylor, G SSgt Bradley L Black

20 BMS, Carswell Crew R-21: AC Capt Craig Wolfenbarger, ICP Capt John B McCormick, IRN Capt Leon S Cox, N 1Lt Dale L Garrett, N 1Lt Alton L Burger, IEW Capt Edgar A Campbell, G SrA Leonard J Bonamo

22 AREFS, March Crew R-131: FP Capt Frank G Showalter III, CP 1Lt Paul C Soper, NN 1Lt Dana A Willis, BO SSgt Robert I Morales

93 AREFS, Castle Crew IT-39: IP Maj Russell L Peterson, IN Capt James E Kinsey, IBO TSgt Guy Raynor

9 AREFS, March KC-10 Crew: P Capt John J Argonti, CP Capt Bradley W Jones, FE TSgt Archie C Moore, BO SSgt Christopher R Burkhart

38 SRS/343 SRS, Offutt Crews R-23/E-57: P Capt Robert E Parker, CP Capt Jerry D Horne, N-1 Capt Thomas W Thidodeaux III, N-2 1Lt Kevin E Tyus, R Capt William T Nance

328 BMS, Castle Crew: IP Maj Robert L Erickson, IP Capt Joseph P Dougherty, IB Capt Phillip J Ratcliff, IB Capt Charles M Vanderberg, IB Capt Thomas A Gaj, IS MSgt Michael R Rook

924 AREFS, Castle Crew R-115: P Maj Jerome C MacLennan, CP 1Lt David H Patton, N 2Lt William S Mosley, BO A1C Kennan C Patience

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44 SMW, Ellsworth Crew S-230: MCCC 1Lt Allen Kirkman Jr, DMCCC 1Lt Michael D O'Leary

91 SMW, Minot Crew R-072: MCCC Capt Steve R Kogge, DMCCC 1Lt Elihu Jones

321 SMW, Grand Forks Crew E-095: MCCC 1Lt Edward J Reuter, DMCCC 2Lt John P Calhoon

341 SMW, Malmstrom Crew R-162: MCCC 1Lt John S Mertes, DMCCC 2Lt Gordon K Lee

390 SMW, Davis-Monthan Crew S-201: MCCC Capt William T Stinson, DMCCC 1Lt James T Smith, MSAT MSgt Richard B Firth, MFT SSgt Loren G Newkirk

308 SMW, Little Rock Crew R-137: MCCC 1Lt Linda Eaton, DMCCC 2Lt Roy Moore, MSAT A1C Scott Meyers, MFT A1C Tim Spiegel

351 SMW, Whiteman Crew R-053: MCCC Capt Ricardo J Pearson, DMCCC 2Lt Walter F Kelly

381 SMW, McConnell Crew R-122: MCCC Capt Steven M Roberts, DMCCC 2Lt Vicki E Combs, MSAT A1C Kevin B O'Quinn, MFT A1C Robert M McCallum

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HALL OF FAME

TACTICAL FLYING

OVER TWENTY-SEVEN YEARS

170 AREFG, McGuire (NJANG)	Feb. '56

OVER TWENTY-FIVE YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar. '58
157 AREFG, Pease (NHANG)	Jun '58

OVER TWENTY-FOUR YEARS

940 AREFG, Mather (USAFR)	May '59
307 AREFG, Travis	Sept. '59

OVER TWENTY-TWO YEARS

151 AREFG, Salt Lake City (UTANG)	Feb. '61
134 AREFG, McGhee Tyson (TNANG)	Aug. '61

OVER TWENTY-ONE YEARS

11 SG, Fairford	Feb. '62
340 AREFG, Altus	Jun '62
96 BMW, Dyess	Aug. '62

OVER NINETEEN YEARS

160 AREFG, Rickenbacker (OHANG)	Dec. '64

OVER EIGHTEEN YEARS

320 BMW, Mather	Jul '65

OVER SEVENTEEN YEARS

452 AREFW, March (USAFR)	Sept '66

OVER SIXTEEN YEARS

92 BMW, Fairchild	Feb '67
55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67

OVER FOURTEEN YEARS

5 BMW, Minot	Feb '69
42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69

OVER THIRTEEN YEARS

28 BMW, Ellsworth	May '70

OVER ELEVEN YEARS

101 AREFW, Bangor (MEANG)	Mar '72
306 SW, Mildenhall	Apr '72
416 BMW, Griffiss	May '72
305 AREFW, Grissom	Aug '72

OVER TEN YEARS

379 BMW, Wurtsmith	Apr '73

OVER NINE YEARS

931 AREFG, Grissom (USAFR)	Feb '74
384 AREFW, McConnell	Mar '74
189 AREFG, Little Rock (ARANG)	May '74
43 SW, Andersen	Dec '74

OVER EIGHT YEARS

68 AREFG, Seymour Johnson	Sep '75

OVER SIX YEARS

410 BMW, K.I. Sawyer	Apr '77
190 AREFG, Forbes (KSANG)	Apr '77
128 AREFG, Milwaukee (WIANG)	Jul '77

ICBM

OVER NINETEEN YEARS

1 STRAD, Vandenberg	Sept '64

OVER THIRTEEN YEARS

341 SMW, Malmstrom	Apr '70

OVER ELEVEN YEARS

321 SMW, Grand Forks	Aug '72

OVER TEN YEARS

390 SMW, Davis-Monthan	Jul '73

OVER NINE YEARS

351 SMW, Whiteman	Oct '74
91 SMW, Minot	Nov '74

OVER FIVE YEARS

381 SMW, McConnell	Aug '78
44 SMW, Ellsworth	Nov '78

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.

*U.S. Government Printing Office